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THE BREEDING OF CRIMSON CHATS IN THE MORAWA DISTRICT IN 1949

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Bird movements in the Morawa district during 1949 were of unusual interest and the breeding season was marked by the occurrence of several species of birds not seen here during 1948. Climatic conditions over the last two years have been in strange contrast. During the whole of 1948 many local rain gauges registered less than a total of seven inches and a comparative drought persisted until late July of 1949, but the late season developed remarkably well. Favoured by well-spaced falls and mild temperatures there was luxuriant growth, abundant insect life and profuse flowering of both annuals and perennial shrubs.

In 1949 the songs of White-winged Trillers and Rufous Song Larks—absent during 1948—were conspicuous. There was an extraordinary invasion of Red-capped Robins and unusual late-summer congregations of Little Crows, numbering up to 200 birds. Occasionally such flocks were heard at night and, on one occasion, seen by moonlight. Avocets and White-headed Stilts bred in numbers throughout the local salt lake system. Unusual records included the Bourke Parrot, Weeros breeding throughout the district and widespread flocks of Crimson Chats *(Epthianura tricolor)* also breeding locally. The appearance of the latter species and its nesting activities, confined to only a few weeks, offered an excellent opportunity for closer study and photography. The following account is based mainly upon notes taken in a particularly favourable locality bordering a salt lake some two miles to the south of the township of Morawa and on the main road.

OCCURRENCE

The only previous note which I have made on the Crimson Chat was a sight record of a pair of birds at Merkanooka, 12 miles westward, in February 1941. Shortly afterwards I left the district and did not return again until February 1948. Very few local residents know the bird, but those who do describe it as an occasional visitor during the dry months.

The extraordinary 1949 invasion of the species, in numbers, was first noticed on September 8. On that day I was surprised to find about a dozen birds in an area of salt-bush, everlastings and grass,

bordering samphire and salt lake on the southern outskirts of Morawa. This small flock had not been there at the time of a previous visit about a fortnight earlier.

During subsequent weeks numbers appeared in suitable habitats closer to the town while frequent reports of their presence came from many other adjacent localities. From numerous points within a 20-mile radius came queries concerning the identity of an unfamiliar little "red-bird." It soon became apparent that the Chats would breed locally.

Serventy and Whittell *(Handbook of the Birds of Western Australia,* p. 8) indicate that in the North-west the Crimson Chat is regarded as a species which will nest immediately after good rains. As the White-fronted Chat *(E. albifrons)* had commenced breeding in the district in June, I at first considered that the Crimson Chat had bred earlier. All of the birds seen on September 8, however, were adults.

On September 12 I returned again for a closer examination and from the general behaviour of the Chats felt certain that they were about to nest. Mostly they were scattered about in pairs and any contacts between pairs and odd birds were accompanied by much bill clicking and chasing.

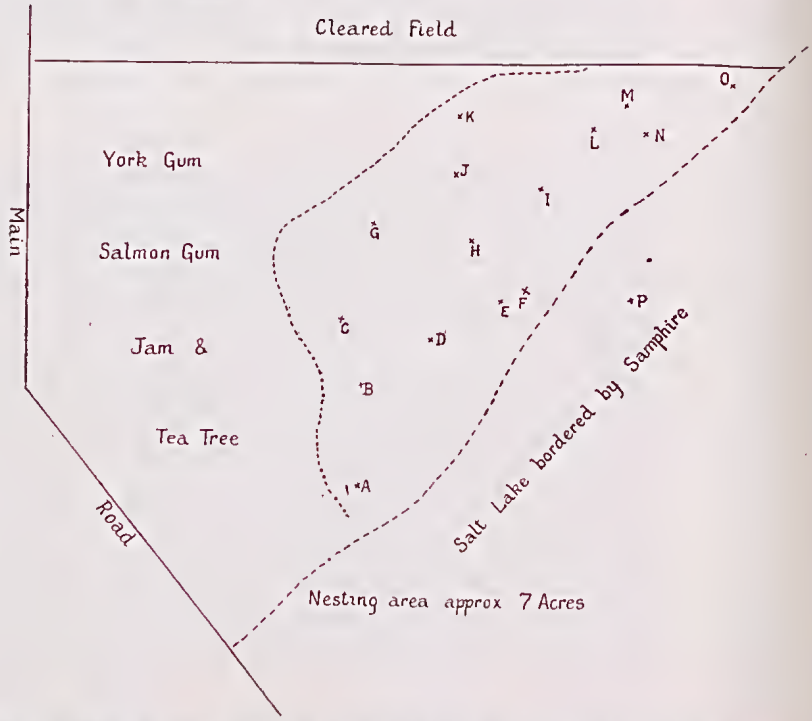

Fig. 1. The nesting area is enclosed by the dotted line. The nest, marked P is situated outside of this area, among samphire, but is obviously part of the community.

The next visit to the area on September 22, revealed that nest building had already commenced. A male and a female were watched carrying fine twigs and grass to a partly-constructed nest about six inches above the ground in the base of a tea tree clump. This site is indicated as A in Figure 1. Shortly afterwards a second nest C containing three eggs was found in a salt bush and about four inches above ground.

On September 26 an additional five nests, bringing the total in the area to seven, were located. Another was found on September 28 while a much closer examination made on October 3 revealed 10 nests, each with three eggs or three recently hatched young.

Between October 3 and October 25 several visits were made and the whole section carefuly culled for nests which were marked to avoid confusion and plotted on a plan. The total reached a maximum of 16, of which three at this stage had been deserted after each containing three eggs. Rain and strong winds over a period of some days was the probable cause.

By October 25 many young had already left the nests and were concealed under salt bush and among the drying grasses; several territories had been completely abandoned and the population density had passed its zenith. Meanwhile smaller communities under observation elsewhere had almost completed a similar rapid cycle. Young were on the wing everywhere.

OBSERVATIONS ON BIRDS NESTING AT J

The days of October 10 and 11, between 9 a.m. and 3 p.m., were spent in continuous observation and photography at the nest marked J. During this period data on the activity and behaviour of birds within range was collected. At the time there were three partly feathered young in the nest.

Calls and song.—The call of the Crimson Chat is generally described in texts as a metallic note resembling that of the White-fronted Chat. This note, although occasionally used, was not typical. Five calls could be recognised.

(1) A sweet but shrill whistle usually uttered three times: "wheee! wheee! wheee!"
(2) A mournful whistle in two syllables, "tee-wheeee---!" uttered by the male. A good deal of this calling was used by the birds when they were establishing territories.
(3) A low truculent chatter usually uttered when a territory holder charged a straying neighbour.
(4) A plaintive hissing made by birds attempting to use the injury feigning decoy.
(5) A metallic "ting!" somewhat resembling the call of the White-fronted Chat. This appeared to be used as a flock call.

Mating.—Occasional matings were witnessed on a number of different territories throughout the area. Birds of nest J on October 10, between 10 a.m. and 10.30 a.m., twice attempted to mate. Once the male initiated proceedings by crouching and tilting the body and shaking his tail from side to side. He was then mounted by the female.

Defence of territory.—The habitat occupied by the chats consisted of fairly open salt bush and grassland and running into samphire on one side. Elsewhere the edges were flanked by jam and eucalypt throughout which numerous Red-capped Robins were breeding. On September 22 I watched with great interest a series of encounters between a pair of Chats from nest A and a pair of Red-capped Robins whose territory lay adjacent, but among the jam trees. Time after time the birds charged one another without either pair offering to give ground. Finally the Chats retreated. At the time, I formed the opinion that the conspicuous red colour of the males may have lead to some confusion. David Lack (*The Life of the Robin*, chapter XII) describes a series of experiments in which the red colour patch on the breast of the English Robin appears to be of special significance in relation to the holding and defence of territory. Willie Wagtails and the Narrow-billed Bronze Cuckoo were also attacked by Chats when they encroached on territories, but they did not resist.

Chats most frequently attacked members of their own species which strayed in the course of food gathering or which chanced to fly across and infringe a territory. On the morning of October 11, a plot

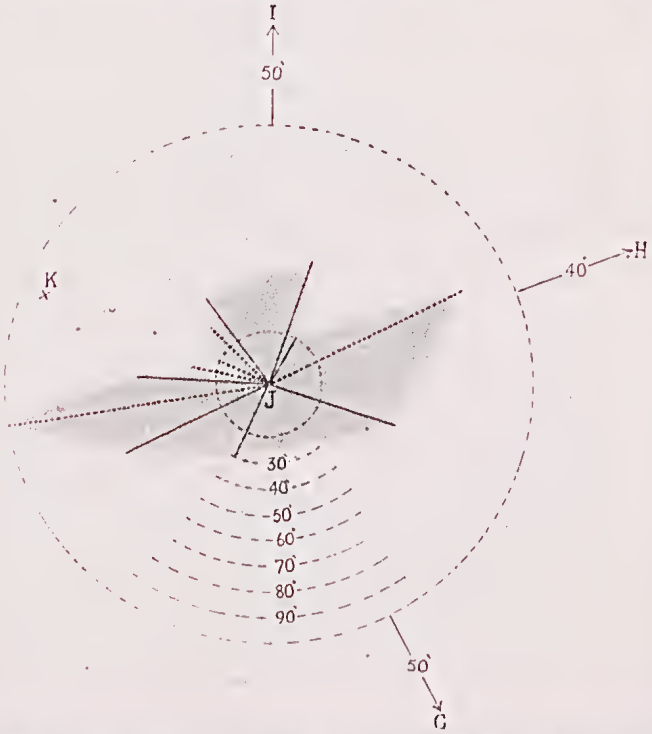

Fig. 2. The approximate territory of birds nesting at J. The dotted lines represent the paths followed when attacking neighbouring Chats. The continuous lines lead to frequently used food-gathering locations. Distances are given in feet. G, H, I and K are the nearest nests.

was made of the points at which the holders of territory J attacked other chats. In the course of gathering larvae for their young the parents had a number of well-defined spots to which they most frequently returned. These were also plotted as a series of straight lines radiating from the nest. The shaded portion of the diagram indicates an area bounded by the outer extremities of these radiating lines and serves to give some idea of the extent of a territory. It has been defined by food gathering sorties and by aggression towards other Chats. For purposes of comparison its area can be reckoned as roughly equivalent to a square 25 yards across. During all the watching of individual pairs of Chats, parents feeding their young collected food only from an area immediately surrounding their nests and did not forage on a "common territory".

Nests.—Nests of this particular community were, with only a single exception, built in salt bushes, and all were between three and six inches above the ground. Elsewhere salt bush was also a favourite but was not invariably used. Four nests were examined in some detail.

	Inside measurement	Outside measurement	No. of pieces
A	1⅜in.	2½in.	512
B	1½in.	2½in.	400
C	1⅜in.	3in.	—
D	1⅜in.	2½in.	520

Overall size and firmness of structure varied considerably, as did the character of the individual twigs used to form the foundations. Nest C consisted of 293 twigs alone, without the lining, and some of the twigs were as long as 10 inches. Generally, linings consisted of fine grasses, hairs and bark fibres.

Brooding, feeding and nest hygiene.—Both males and females brooded, fed the young, and assisted with nest hygiene. Caterpillars and larvae constituted the main food items but occasionally winged insects were fed to the young.

SUMMARY

The Crimson Chats did not arrive to breed until favourable climatic conditions had developed an abundant growth of herbage. White-fronted Chats began nesting in June after first falls of rain, but before the grasses were showing.

Within a few days of their influx the Crimson Chats began nesting and within a month of arrival nesting had reached a climax. Within two months of arrival many young were on the wing and with their parents had deserted the original nesting territories and flocked on common feeding areas.

All of the nests which I saw were grouped into communities, and this may have some relationship to the coincidence of breeding and the short duration of the breeding period, which in this case very definitely covered the period of most abundant caterpillar supply. (Fraser Darling in *Bird Flocks and the Breeding Cycle* mentions how a bird may be influenced to a certain action by the sight of another performing it). In view of the apparently brief period of maximum food supply there seems to be some necessity for such a typically

arid-country bird as the Crimson Chat to be able to time its breeding cycle to such favourable periods and to avoid its prolongation into less favourable or adverse conditions. A social nesting habit may under these conditions be of great value.

Birds observed on the seven acre area held territories surrounding their nests and the main purpose appeared to be to ensure an adequate food supply for the nestlings. Both sexes defended the territory by song and by aggressive bill clicking displays. The male may have used his conspicuous colour as well.

After leaving their nests family parties flocked on common ground.

The influx of Crimson Chats coincided with one of the best "growing" seasons within the memory of local farmers. Although rains were much later than usual well-spaced falls and mild temperatures combined to create highly favourable conditions for the food supply required by the Chats.

OBSERVATIONS ON MARSUPIALS IN CAPTIVITY

By L. GLAUERT, Western Australian Museum, Perth.

Over a period of years several individuals of three species of native marsupials have been kept in captivity at the Museum, enabling observations to be made on them in respect to certain phases of their life history. The following is a summary of our experiences:—

AUSTRALIAN BANDICOOTS (Family Peramelidae):

Quenda *(Isoodon obesulus):*

In some parts of Australia Quendas are accused of eating potatoes and root crops, an accusation which experiments made at the Museum showed to be groundless. Animals kept without food for a couple of days were offered potatoes, carrots and turnips which they refused to touch in spite of their hunger. But worms, insects, spiders and even scorpions and centipedes were seized at once and devoured with evident relish.

One little animal, which was a pet at the Museum for a number of years, reached us when it was about the size of a half-grown rat. At that time we knew nothing of the animal's habits, although its teeth suggested it was an insect eater and perhaps a flesh eater, too. We therefore gave it a certain ration of raw meat daily, to which were added such insects as we could obtain. We even tried live scorpions and centipedes and found that in every case the animal knew how to deal with its prey. With a rapid scrambling movement of the forefeet, which was rather like a strenuous patting, the animal used to crush its victim, then lifting it to its mouth, or bending down for the purpose, the coup-de-grace was administered. Centipedes were bitten behind the head, but scorpions were bitten on the tail, thus making the sting useless.

As an experiment I, on one occasion, offered the animal a mouse which had been caught in a trap at home. To my astonish-